

***Rapid Spacecraft Development Office News***

***January 2001***

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**A Message from the Chief of the RSDO**

**Staffing Updates**

**Meet Naseema Maroof**

**Contracting Officer's Corner**

**Insurance vs. Security: What is the Difference?**

**A Reminder... Small Disadvantaged Businesses**

**New Business**

**Geospace Electrodynamics Connections to Utilize RSDO Contract**

**Solar Dynamics Observatory Utilizes RSDO Services**

**Conducting e-Business with the RSDO**

**RSDO Industry Day A Success!**

**Question & Answer Session Notes**

**A New RSDO Challenge: Full Cost of Operations Recovery**

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## **A Message from the Chief of the RSDO**

Happy New Year! As usual, we have a great deal of news to report from the RSDO. First, I would like to describe a recent organizational change at GSFC that affected our office. On December 31, 2000, Goddard's Mission Services Program Office (Code 450) underwent a reorganization designed to streamline and focus its structure. Consequently, the RSDO was moved from Code 450 to Code 400—the Flight Programs and Projects Directorate. As a result, our GSFC Mail code has also changed to Code 400.3. We have some internal personnel changes to report, as well. Ron Miller has accepted a Tour of Duty in Code 700.1, Goddard's Project Formulation Office. In his new position, Ron will assist with planning future missions from the concept formulation stage, up to implementation. Ron will be working on missions such as the Solar Dynamics Observatory (SDO) and Earth Science Systems Pathfinder (ESSP). Although this tour of duty is temporary, it is unlikely that Ron will be returning to the RSDO. We wish him well, and thank him for his many contributions to RSDO's success.

In addition, we have a new staff member coming on-board. Naseema Maroof will be joining us, effective on January 22, 2001, as a Mission Integration Manager. Be sure to read the short biographical sketch located in this issue to learn more about her background and varied experience.

There are some interesting articles I would like to highlight in this issue. One describes the first RSDO Industry Day at Goddard, held last December. Feedback from participants indicated that the conference was a great success, and we hope to convene similar meetings in the future. In addition, vendors will be particularly interested in reading about the proper way to conduct e-business with the RSDO, since several RSDO business opportunities are imminent. Also included in this issue are an article clarifying the difference between insurance and security for vendors, articles describing some new RSDO customers (the Geospace Electrodynamics Connections mission and the SDO), and a discussion regarding a challenge RSDO must face—the process of full recovery of operations costs. As always, please feel free to contact me via email ([bill.watson@gsfc.nasa.gov](mailto:bill.watson@gsfc.nasa.gov)) or telephone (301.286.1289) if you have any comments or questions regarding RSDO business.

***Bill Watson/RSDO Chief***

## Staffing Updates

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### Meet Naseema Maroof

Naseema began her NASA career in December 1980 as an Operations Research Analyst in the Office of Flight Assurance at GSFC, working in the Information Processing and Data Systems Technology Divisions in the Mission Operations & Data Systems Directorate. She primarily served in the Resource Analysis Office, Office of the Chief Financial Officer (CFO)/Comptroller. In November 1993, she moved to NASA Headquarters to work in the Systems and Cost Analysis Division of the CFO/Comptroller.

Naseema's varied experience includes:

- Serving as Cost Co-Chair for Independent Annual Reviews (IAR) of NASA's multibillion dollar Third Great Observatory Program (the Chandra Observatory, also known as AXAF), Tropical Rainfall Measuring Mission (TRMM), and High Performing Computing Communications (HPCC) mission
- Experience as Non Advocate Review (NAR) Cost Team Leader for the Space Infrared Telescope Facility (SIRTF); Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED) mission; Far Ultraviolet Spectroscopic Explorer (FUSE); Earth Observing System (EOS); Ice, Cloud, and land Elevation Satellite (ICESAT); and Tracking and Data Relay Satellites (TDRS) H, I, and J
- Participation in Announcement of Opportunity proposal evaluation and independent assessment experience in the selection of STARDUST (Discovery Mission), Medium-class Explorer (MIDEX), EOS, TIMED, International Solar Terrestrial Physics (ISTP), and Solar Terrestrial Science Program (STSP) programs for NASA
- Functioning as Cost Co-Chair for SIRTF Delta Non Advocate Review (NAR) in 1996, SIRTF NAR in 1997, and continuous service on SIRTF IAR Board since 1998

In February 1999, Naseema returned to NASA/GSFC to join the Mission Integration Office in the Flight Programs and Projects Directorate, serving on the DoD's Single Process Initiative (SPI). In this capacity she represented NASA/GSFC as an Integrated Product Team (IPT) member on contractor's SPI Management Councils for the Geosynchronous Operational Environmental Satellites (GOES), Polar Operational Environmental Satellites (POES), and Aqua/EOS PM programs.

Naseema received a Master of Science degree in Mathematics from Pune University in Pune, India in 1972, and a Master of Science degree in Operations Research from the George Washington University in 1977.

Naseema will be joining the RSDO on January 22, as a Mission Integration Manager. Welcome, Naseema! We look forward to working with you.

### Insurance vs. Security: What is the Difference?

The term liable is defined as "being legally obligated or responsible." Under the Rapid II Contracts there are areas for which the government is liable, the contractor is liable, or both are liable simultaneously. This article will focus on insurance and security—the two primary means by which the vendor and government can reduce their respective liabilities.

A vendor can purchase insurance in order to mitigate the risk undertaken in a Delivery in Orbit Environment. Clause I.A.20 of the Rapid II Contract states, "a payback of the total price or a replacement spacecraft shall be required if the spacecraft criteria are not met as determined by the Contracting Office." The vendor may purchase insurance to mitigate this risk, however, buying insurance is not a contract requirement. The purchase of insurance is simply a business decision the vendor makes. In making this decision, the vendor must consider the risk of payback compared to competitive cost of the spacecraft plus insurance. The government is not in a position to give advice on this matter. If the vendor chooses to purchase insurance, the cost of the insurance may be included in the Fixed Price of the spacecraft. If the vendor does not include the cost of the insurance in the Fixed Price of the spacecraft, the government cannot pay it after a spacecraft Delivery Order is awarded. Therefore, if a vendor desires the government to pay for the cost of the insurance, it is imperative that this cost be included in the spacecraft's Fixed Price.

Security, which is a requirement of the Rapid II Contract, is a separate issue from Insurance. According to FAR 32.202-4, the government must obtain adequate security for government financing. Since finance payments are a part of the Rapid II Contracts, the government must receive proof of a vendor's ability to obtain security before awarding such contracts. Security mitigates the government's risk in supplying the vendor finance payments. According to the FAR, some acceptable forms of security include (but are not limited to): guarantee of repayment from a person or corporation of demonstrated liquid net worth connected by significant ownership to the vendor, an irrevocable Letter of Credit from a federally insured financial institution, or a bond from a surety acceptable with FAR Part 28. The value of the security must be at least equal to the maximum unliquidated amount of contract financing. Proof of a vendor's ability to obtain security must be presented to the government in order to be awarded a contract under Rapid II.

This information was presented at the RSDO Industry Day at Goddard Space Flight Center on December 7, 2000 (click here to view the presentation <http://128.183.243.99/Presentations/Edmond.pdf>). During the presentation, vendors expressed concern regarding the risk incurred when the spacecraft and instrument are at vendor facilities for integration. In this particular scenario, both the spacecraft and instrument are at the vendor's risk. The government believed that in most cases the vendor's facility insurance would be able to cover the cost of replacing these items in case of damage. According to industry representatives, however, in cases where the instrument value far exceeds the spacecraft value, this assumption may not be correct. The cost of the spacecraft would be covered. Since the insurance companies would need to know the value of the instrument in a timely fashion, it may prove difficult to insure the instrument. The RSDO will look into this area of concern and address it in a future article. Any additional input from industry on this topic will be greatly appreciated.

**By** Jerry Edmond/RSDO Contracts Specialist

## **A Reminder**

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The RSDO strongly suggests you consider choosing a small or disadvantaged business when selecting your subcontractors. There are many businesses in this category who, when added to your team, could potentially increase the value of your offerings.

### **Geospace Electrodynamic Connections to Utilize RSDO Contract**

The Geospace Electrodynamic Connections (GEC) mission is the fifth of six missions in the Solar Terrestrial Probes (STP) mission line. GEC is a two year mission, currently planned for launch on a Delta 2920 from Vandenberg Air Force Base in December 2008. The launch will place three or four spacecraft into a high-inclination elliptical orbit, with an apogee of 2000 km and a perigee of 185 km. GEC has been specifically designed to study the transfer of energy extracted from the solar wind by the magnetosphere into the upper atmosphere, and the subsequent processing, re-distribution, and dissipation of this energy through ion-neutral interactions within the coupled ionosphere-thermosphere system.

The GEC spacecraft will be identically instrumented for in-situ sampling of the ionized and neutral gases of the upper atmosphere, and measurement of the electric and magnetic fields that couple this region to the magnetosphere. Measurements will include electric field; ion velocity; neutral particle velocity; magnetic field; energetic electrons and protons; ion, neutral particle, and electron temperatures; ion density; and ion and neutral particle composition. These measurements will be implemented with six to eight instruments on each spacecraft, to be selected via a NASA Announcement of Opportunity in 2003.

The GEC spacecraft will fly in a formation called "pearls on a string." This formation will allow the spacecraft to make successive measurements at the same latitude, or, alternatively, to provide simultaneous measurements over varying spatial scales at different points across a latitudinally extended region. There is a scientific desire to fly the spacecraft formation with inter-spacecraft separations as small as 10 km.

The GEC mission also includes up to a dozen deep dipping campaigns. Each campaign will last approximately a week. During these campaigns, the spacecraft will use onboard propulsion to perform perigee excursions to altitudes of 130 km or lower.

There are several engineering challenges involved with the mission. These are: 1) accommodating multiple spacecraft and a deployment system within the Delta fairing; 2) attitude control, aerodynamic stability, and formation flying at altitudes of 130 km or lower; 3) materials selection to survive an atomic oxygen fluence of roughly  $10^{23}$ ; and 4) spacecraft design to minimize disturbance of the surrounding plasma.

GEC was scheduled to conduct an in-house accommodation study with GSFC's Integrated Mission Design Center (IMDC) the first week in January 2001 to further refine the mission concept. Following that study, GEC will release an RFO for a spacecraft accommodations study through the RSDO in mid- to late-spring 2001.

***By Mary DiJoseph/STP Formulation Manager/GSFC Code 740.2***

## **Solar Dynamics Observatory Utilizes RSDO Services**

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In mid December, the Solar Dynamics Observatory (SDO) formulation team, utilizing the Fair Opportunity clause of the Rapid II contract, selected five vendors to perform a quick look accommodation assessment. The team utilized the Rapid II contract data and public information provided to RSDO under the "Catalog Setup" Delivery Order. Also considered was information available from the final reports of other RSDO studies, particularly geosynchronous orbit (GEO) related studies, and information available via the Internet. Proposals were not solicited and would not have been considered. Every bus was evaluated against primary technical parameters, with secondary parameters used to evaluate the "risk" of successfully performing the study activity. If a vendor had more than one bus that passed the screen, only one DO would be offered.

Of particular interest to the SDO team were buses that started with the right "class" of capabilities (SDO will launch on a Delta), and buses possessing high data rate capabilities (SDO is expected to have data rates in the 160 Mbps range). Vendor experience with long lived buses (SDO has a requirement for a five year lifetime with a ten year goal) and GEO was evaluated for risk. Past performance on other RSDO studies was also considered in the risk evaluation

The five chosen vendors (Ball, Lockheed Martin, Orbital, Spectrum Astro, and TRW) will identify current capabilities, driving requirements, and payload accommodation enhancements for their respective buses using a generic SDO payload. These studies will assist NASA in developing the instrument Announcement of Opportunity, by identifying capabilities in industry and preferred interfaces. Furthermore, the knowledge of bus capabilities will allow NASA to select the "right" amount of instrumentation (mass, power, data rate, etc.) to enhance the chance of mission success and the probability of maintaining cost targets. The SDO mission, as flagship of the Living With a Star Program (LWS), is a high-visibility mission and the follow-on to the successful Solar and Heliospheric Observatory (SOHO) mission. Successful performance of these studies will allow the SDO Mission and the LWS Program to begin on the right path.

***By Ron Miller/Project Formulation Manager/GSFC Code 700.1***

## Conducting e-Business with the RSDO

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In the past few months, the RSDO has experienced a slew of mishaps and/or time-outs when vendor representatives have tried without success to log into the "Business Area" of the RSDO web site. In this article, we will review the specific procedures that must be followed to ensure successful e-business transactions with the RSDO.

Each current Rapid II vendor is authorized to identify three individuals for whom the RSDO will grant access to the "Business Area" of our web site. Usually, access is granted to the business manager or contracting officer (who will be designated as the "primary" point of contact) and two other individuals who will be considered "alternates". The individual that is designated as primary should be someone who is willing to serve as a point of contact regarding vendor products, since this individual's name and telephone number will be published on the RSDO web site.

The primary point of contact is responsible for providing the following information to Kevin Maloney, RSDO Web Support, (email at [Kevin.J.Maloney.1@gsfc.nasa.gov](mailto:Kevin.J.Maloney.1@gsfc.nasa.gov)) or Jerry Edmond, RSDO Contracting Specialist, (email at [Jerry.P.Edmond.1@gsfc.nasa.gov](mailto:Jerry.P.Edmond.1@gsfc.nasa.gov)) in order for his/her organization to gain access to the RSDO "Business Area".

1. Name (primary + two alternates)
2. A "principal" individual or company IP address for the primary point of contact and the two alternates. No dynamically assigned IP address will be accepted or authorized.
3. Company Name
4. Office Phone Number (primary + two alternates)
5. Email Address (primary + two alternates)

Once this information is provided, appropriate actions will be implemented on our end, and an RSDO representative will contact the authorized individuals to provide the respective user IDs and passwords. It is the responsibility of each primary point of contact and the RSDO to maintain the integrity of the RSDO web site Business Area. Therefore, we cannot overemphasize the importance of accurately maintaining the list of current authorized users. It is vital that vendors inform the RSDO when an authorized employee has departed an organization, so we can make the appropriate security changes to the web site.

In closing, I would like to remind everyone who uses the Business Area on the web site, that the information you upload is a product of your hard work, and if proper Information Technology security measures are not followed, it just might become someone else's.

***By Kevin Maloney/RSDO***



## **RSDO Industry Day A Success!**

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RSDO convened its first Industry Day on December 7, 2000. The conference allowed vendors, customers, and RSDO staff members the opportunity to meet and share information. Several NASA projects and program office personnel presented mission requirements and program information. Representatives from the Gamma-ray Large Area Space Telescope (GLAST), Solar Dynamics Observatory (SDO), National Polar-Orbiting Environmental Satellite System (NPOESS) Preparatory Project (NPP), Magnetospheric Multiscale (MMS), Geospace Electrodynamics Connections (GEC), and Global Precipitation Measurement (GPM) projects presented mission overviews and development status. Staff from the Explorers, Living With a Star (LWS), and Earth Explorers programs presented program overviews and timelines. NASA employees also gave informative presentations on Project Formulation, Liability, and Mission Assurance (Click here to see the Industry Day presentations and the list of participants).

Attendees included representatives from 15 different companies, including the current RAPID II vendors: Ball Aerospace & Technologies Corp., Lockheed Martin, Orbital Sciences Corp., Surrey Satellite Technology Ltd., Spectrum Astro, and TRW. At the end of the day, attendees were given an opportunity to ask the project and mission staff member's questions during a Question and Answer session (click here to see the notes from the Question and Answer session).

Overall, the Industry Day was very informative and successful. Feedback from the projects, programs, and vendors was very positive. The responses indicate that another Industry Day would be useful, so keep your eyes and ears open for another meeting next year.

*By David Bissett/ BA&H*

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### **Question & Answer Session Notes**

The following notes were taken from the Question and Answer Session at the RSDO Industry Day held at GSFC on December 7, 2000. Please note that not all of the items listed are questions—some are specific topics that were discussed at the session.

1. An industry representative suggested that customers should give vendors feedback at the conclusion of a study. The RSDO is currently considering the feasibility of this idea.
2. Reserves held by NASA/GSFC Projects are larger for Cost-Plus than for Fixed Price contracts. In a Fixed Price environment, reserves are held for different reasons than in a Cost-Plus environment. The Cost-Plus reserves are not held back for requirements.
3. RSDO price estimates use historic data from missions that have been launched. The following factors are also used in government estimations:
  - information that is readily available to the RSDO
  - current information outside of the RSDO that is relevant in Pre-Formulation
  - formulation stage studies performed under an RSDO contract.
  - Order placement information (the price is known when the contract is awarded)
4. The RSDO solicits feedback from Vendors on the impact of reducing the number of On-Ramps per year. Feedback in the form of an email or phone call will be greatly appreciated.
5. RSDO recognizes that allowing only one On-Ramp per year (enabling vendors to update the spacecraft in the Catalog) can hinder the technology refresh rate; however annual (January) refresh opportunities exist for catalog buses.
6. Industry commented that the earlier they know who the international participants are, the faster they can come up with a good International Traffic in Arms Regulation (ITAR) plan, with all the agreements in place.
7. A representative from industry asked what could be done to encourage DOD and other agencies to use the RSDO.
  - RSDO responded: Vendors and Industry should let the DOD and other agencies know these contracts exist. RSDO will continue to market the Rapid Contracts.

- RSDO will also continue to talk with the SMEX and MIDEX missions to see what use they might have for the Rapid Contracts.

*By Jerry Edmond, RSDO Contracts Specialist*

## **A New RSDO Challenge: Full Cost of Operations Recovery**

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The acquisition costs to establish and maintain the RSDO catalog, related spacecraft data sets, and CAD (Computer Aided Design) models have been born by the Code S and Y program offices at GSFC. Directorate taxes on flight projects fund RSDO office expenses, ODIN seats, Web development, newsletter publication and a man-year of PACC administrative support. For non-NASA customers, the RSDO may currently collect 1.5% of a satellite delivery order value, or \$150K, whichever is less. This arrangement was exercised in the case of the U.S. Air Force acquisition of Coriolis.

The RSDO has been challenged to get off the tax dole and operate in a full cost recovery mode. Other organizations are facing similar challenges. For instance, the Quality Assurance organization at GSFC will charge RSDO for support costs in conjunction with evaluating on-ramp contract proposals.

Several solutions are possible. Continued Program funding for catalog set-up, as well as for RSDO operations is perhaps the most tractable solution. Fees might be apportioned according to usage of the Rapid Spacecraft Acquisition services.

Another strategy for recovering the RSDO cost of operation is to charge customers a fee for service. Rates on the order of 10% for studies and 1% for spacecraft would, over several years, average to the cost of operations. This option may have significant drawbacks. Customers in the formulation phases (who may have little funding for studies) and AO candidates with no funding will seek both RSDO and Industry RFI assistance.

Finally, it is possible to place a value on the process of evaluating and qualifying spacecraft for eligibility in the RSDO Catalog of core spacecraft buses—in other words, we could institute a certification fee. This option, however, might have the consequence of limiting the field of vendors by increasing the up-front investment required to participate in the RSA program.

We would like to hear vendor, customer and NASA management thoughts on these issues associated with recovery of service costs. Please contact the author at [William.A.Watson.1@gsfc.nasa.gov](mailto:William.A.Watson.1@gsfc.nasa.gov)

***By Bill Watson/ RSDO Chief***